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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,564	10/07/2003	Takuya Miyakawa	9319S-000573	4157
27572	7590	11/30/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			JOLLEY, KIRSTEN	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			1762	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,564

Applicant(s)

MIYAKAWA, TAKUYA TH

Examiner

Kirsten C Jolley

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/18/03, 6/17/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of Group I in the reply filed on September 8, 2004 is acknowledged. The traversal is on the ground(s) that all groups are sufficiently related to each other that an undue burden would not be placed upon the Examiner by maintaining all groups in a single application. This is not found persuasive because the considerations used for examining method claims are different than those used for examining product and apparatus claims.

Product claims are examined based on the properties of the final article produced, not on the method used to create the article. Similarly, apparatus claims are examined based on the structure of the claimed apparatus, not on its intended use. Applicable art for a method of coating do not necessarily encompass all the fields of search required for product or apparatus claims and therefore there is an additional burden in examining the different classes of invention, in addition to the burden based on the different issues that arise in examining method versus article and/or apparatus claims.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 8 and 13 are objected to because of the following informalities:

In claim 8, line 3, it appears that "silt" should be --slit--.

In claim 13, line 5, the phrase "to make a solidified layer, porous layer" is awkward; the Examiner suggests deleting the first occurrence of "layer" in this phrase.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is vague and indefinite because the metes and bounds of the term "rapidly" are not known. "Rapidly" is a relative term of degree, and the specification does not appear to define the limits of the term.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/06491 A1.

U.S. Patent No. 6,656,527 to Gessner et al. is provided as a working English translation of WO 00/06491 A1.

WO '491 discloses a method for forming a porous insulating layer (col. 7, lines 45-47) comprising: a solution-applying step of applying a solution in which an insulating material is dissolved onto a workpiece; a solidified layer-forming step of forming a solidified layer by cooling the solution applied onto the workpiece to a temperature less than or equal to the melting point of a solvent contained in the solution; a drying step of removing the solvent contained in the solidified layer under reduced pressure to make the solidified layer porous; and a firing step of hardening the porous layer obtained by the drying step (col. 2 and col. 5, lines 64-67 of Gessner et al.).

As to claim 2, WO '491 teaches that a "very uniform thickness" is achieved, which results in a flattened surface of the applied layer (col. 7, lines 14-15 of Gessner et al.). The process of WO '491 would necessarily cover unevenness of the surface of the workpiece.

As to claim 5, WO '491 teaches aging the coated substrate prior to cooling, which meets the limitation of removing part of the solvent prior to the solidified layer-forming step (col. 5, lines 48-51 of Gessner et al.).

As to claim 7, it is noted that "rapidly" is a relative term, and it is the Examiner's position that the process of WO '491 rapidly cools the solution as compared with other slower-cooling processes.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/06491 A1. WO '491 (and the U.S. equivalent of Gessner et al.) are applied for the same reasons discussed above in section 6.

WO '491 teaches that "simple, conventional application methods" may be used for applying the solution in its invention (col. 3, lines 66-67 of Gessner et al.). Slit coating is a well known, simple and conventional coating method in the coating art. It would have been obvious for one having ordinary skill in the art to have selected any conventional, simple coating method, including slit coating, with the expectation of successful results since WO '491 is not specifically limiting.

9. Claims 6 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/06491 A1 as applied to claims 1-5 and 7-8 above, and further in view of You et al. (US 6,407,009).

WO '491 is applied for the reasons discussed above. WO '491 lacks a teaching of performing an airtight step, or a step of melting a surface of the porous layer to enclose pores of the surface of the porous layer. You et al. is cited for its teaching of forming low dielectric insulating films by a spin method, similar to WO '491. You et al. discloses a post-application step of reflowing the dielectric material by melting it (using a high temperature device) to consolidate and even the surface (col. 18-19). Such a step would also necessarily result in enclosing pores on the surface of the dielectric material. It would have been obvious to one

having ordinary skill in the art to have incorporated the reflowing step of You et al. in the method of WO '491 in order to similarly consolidate and even the resulting surface.

As to claim 14, WO '491 teaches vaporizing the solvent by sublimation (col. 2, lines 63-65 of Gessner et al.).

As to claims 15-16, WO '491 teaches forming a silicon oxide layer using tetraethoxysilane compounds (col. 3, lines 23-24, and col. 3, line 33 of Gessner et al.).

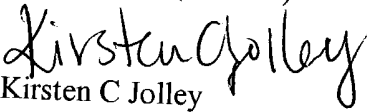
As to claim 17, WO '491 does not disclose the porosity of the formed layer. However, one skilled in the art would have recognized that the porosity is the result of the selected materials used, treatment temperatures and times, etc. It would have been obvious for one skilled in the art to have optimized the porosity. Alternatively, it is the Examiner's position that the process of WO '491 must necessarily achieve a porosity of 90% since it uses similar materials and process steps as those claimed by Applicant.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kirsten C Jolley
Primary Examiner
Art Unit 1762

kcj